WHAT IS CLAIMED IS:

1. A method for adjusting the spectral response of a optical waveguide grating, the method comprising:

imparting a controlled extension to a surface of a support member;

attaching an optical waveguide grating to the surface of the support member, a longitudinal axis of the grating in alignment with the direction of the controlled extension;

removing the controlled extension from the support member to create a compressive axial strain on the grating; and

altering the axial strain in the grating to adjust its spectral response.

2. The method of claim 1, wherein imparting a controlled extension comprises applying a controlled tensile strain to the support member.

3. The method of claim 2 wherein applying a controlled tensile strain comprises bending the support member.

4. The method of claim 2, wherein applying a controlled tensile strain comprises stretching the support member.

5 The method of claim 1 wherein imparting a controlled extension comprises applying a controlled temperature change to a support member having a non-zero coefficient of thermal expansion.

6. The method of claim 1 wherein imparting a controlled extension comprises applying a controlled temperature change to a support member having a coefficient of thermal expansion different from a coefficient to thermal expansion of the optical waveguide grating.

7. The method of claim 1, wherein altering the axial strain in the grating to adjust its spectral response comprises applying tensile axial strain to the grating.

8. The method of claim 7, wherein the compressive axial strain created in the grating has a magnitude equal to or greater than a magnitude of the tensile axial strain applied to the grating to adjust its spectral response.

9. The method of claim 7, wherein applying tensile axial strain to the grating comprises applying a controlled tensile strain to the support member.

10. The method of claim 9 wherein applying a controlled tensile strain to the support member comprises bending the support member.

11. The method of claim 9, wherein applying a controlled tensile strain to the support member comprises stretching the support member.

12. The method of claim 7 wherein applying tensile axial strain to the optical grating comprises applying a controlled temperature change to the support member.

13. The method of claim 1, wherein attaching an optical waveguide grating to the surface of the support member comprises attaching a grating having a length of 100 mm or greater.

14. The method of claim 13, wherein attaching an optical waveguide grating to the surface of the support member comprises attaching a grating having a length of 1 m or greater.

15. The method of claim 1, wherein attaching an optical waveguide grating to the surface of the support member comprises attaching the grating along its entire length.

16. The method of claim 1, wherein the optical grating comprises an optical grating selected from the group consisting essentially of: fiber Bragg gratings and long period gratings.

17. The method of claim 1, wherein where the support member is asymmetric about its neutral axis, and wherein imparting a controlled extension to a surface of a support

member comprises imparting a controlled extension to the surface most distant from the neutral axis.

18. An apparatus for adjusting the spectral response of an optical waveguide grating, the apparatus comprising:

a support memberto which a longitudinal optical waveguide grating can be attached, the optical waveguide grating being compressively axially strained by the support member; and

means for altering the axial strain of the optical waveguide grating to adjust its spectral response.

19. The apparatus of claim 18, wherein the support member comprises a longitudinal beam.

20. The apparatus of claim 19, wherein the means for altering the axial strain of the grating comprises a bending moment applicator to bend the longitudinal beam.

21. The apparatus of claim 20, wherein the bending moment applicator applies a pair of bending moments.

22. The apparatus of claim 18, wherein the support member is configured for bending and rotating about its centroidal axis.

23. The apparatus of claim 18, wherein where the support member is asymmetric about its neutral axis.

24. A method for pre-compressing an optical waveguide grating, the method comprising:

applying a controlled tensile strain to a support surface of a support member;

attaching an optical waveguide grating to the strained support surface of the support member, a longitudinal axis of the grating in alignment with the tensile strain;

removing the controlled tensile strain from the support surface to create a compressive axial strain on the grating.

25. A method for pre-compressing an optical waveguide grating, the method comprising:

elongating a support member having a non-zero coefficient of thermal expansion by applying a controlled thermal load;

attaching an optical waveguide grating to a surface of the elongated support member, a longitudinal axis of the grating in alignment with a direction of elongation of the support member;

removing the controlled thermal load from the support member to create a compressive axial strain on the grating.